UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF COMMERCIAL FISHERIES

CALIFORNIA FISHERY MARKET NEWS MONTHLY SUMMARY

July 1963

Part II–Fishing Information*

Sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists

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San Diego 6, California

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TUNA SEINERS ASSIST THERMOCLINE STUDY

The masters and crews of the purse seiners Caribbean, Carol Virginia, Elsie A, Elsinore, Nautilus, Royal Pacific, and West Point are assisting scientists at the U.S. Bureau of Commercial Fisheries Biological Laboratory, San Diego in a study to determine whether the depth and strength of the thermocline affects rate of success of purse seining for tuna. The thermocline is the region of sharp temperature change which separates the warm surface water (mixed layer) from the cold water of the depths. The warm surface mixed layer above the thermocline varies greatly in thickness depending on location and time of year. For example, in the eastern portion of tropical oceans it varies from 50 feet or less to 200 feet, whereas in the western margins it is much thicker, frequently more than 300 feet. The regions where purse seining for tuna is carried on successfully, notably the eastern tropical Pacific, ordinarily have thermoclines that can be reached by the nets. It might be that the thermocline acts as a barrier to tuna at times and limits their escapement from the net.

The thermocline data so far available from the seiners mentioned above suggests that as the depth of the thermocline increases past about 60 feet, the percent of sets which are successful may decrease, and as the temperature gradient in the thermocline increases, the percent of successful sets may increase. However, proof of the thermocline's effect on purse seining has not been established with the limited data available. What is needed is a great many more observations on the thermocline taken at the time purse seine sets are made.

Equipment required to measure water temperatures at depths consists of a bathythermograph, or BT, and a small winch to lower and retrieve it. The BT is a torpedo-shaped device which records, on a coated glass slide, temperature against depth as it is lowered below the surface.

The Bureau's San Diego laboratory has installed the necessary equipment on the seven vessels noted. The U.S. Navy is also interested in obtaining more information on thermocline depths and has assisted by furnishing some of the BT's and winches. Laboratory technicians have accompanied the vessels on the first trip after the equipment was installed to take the observations and to instruct crew members in the procedure. BT casts and the necessary record keeping are not particularly time consuming and can fit into a vessel's normal fishing schedule. We plan to obtain the cooperation of a number of other vessels for we are anxious to answer as quickly as possible the question of whether seining success is related to the depth and strength of the thermocline.

Carlo Sanfillipo, first mate on Royal Pacific, prepares to lower bathythermograph.

SEA SURFACE TEMPERATURE CHARTS, EASTERN PACIFIC OCEAN
JULY 1963

Acknowledgments

The following organizations and stations contributed data for the July 1963 charts:

U.S. Weather Bureau, San Diego, California
U.S. Weather Bureau Ship Visitation Office, Long Beach, California
U.S. Naval Communication Station Balboa, Fort Amador, Canal Zone
U.S. Coast Guard, Port Hueneme Light Station, Port Hueneme, California
U.S. Bureau of Commercial Fisheries Biological Laboratories, Honolulu, Hawaii; La Jolla, California; Seattle, Washington
U.S. Bureau of Commercial Fisheries, Exploratory Fishing and Gear Research Base, Seattle, Washington
California Department of Fish and Game, R/V N.B. Scofield
Guadalupe Island, Coronado Island, Ensenada, Cedros Island and Almejas Bay by Pedro Mercado of the Universidad Autonoma de Baja California, Ensenada, Mexico
Hopkins Marine Station, Pacific Grove, California by J. P. Balesteri
Inter-American Geodetic Survey by Rene Cortes at Salina Cruz, Mexico; David Ortega at Manzanillo, Mexico; Romeo Valencia at Pt. San Jose, Guatemala; R. Pereira at Pt. Armuelles, Panama; V. E. Castillo at Tumaco, Colombia; N. Zambrano at San Cristobal, Galapagos; S. Valenzuela at La Libertad, Ecuador, E. Lopez at Talara, Peru; Juan Andia at San Juan, Peru
Inter-American Tropical Tuna Commission, La Jolla and Terminal Island, California
Kelco Company, San Diego, California
Oregon State University
Pacific Oceanographic Group, Nanaimo, British Columbia, by H. J. Hollister from observations by R. W. Collins at Quatsino Lightstation; N. R. Shrimpton at Cape St. James Light; B. Stuart at Amphitrite Point Light; J. M. Hartt at Langara Island Light
Scripps Institution of Oceanography, La Jolla, California by Margaret Robinson and Hans Klein

Charts

Figure 1.--Mean sea surface temperatures (°F) derived from approximately 8000 observations. Squares show temperatures at weather-ship stations. Numerals on shore are temperatures at coastal and light stations.

Figure 2.--Deviation of sea surface temperatures (°F) from long term mean charts of H.O. 225. Hatched areas are colder than mean.

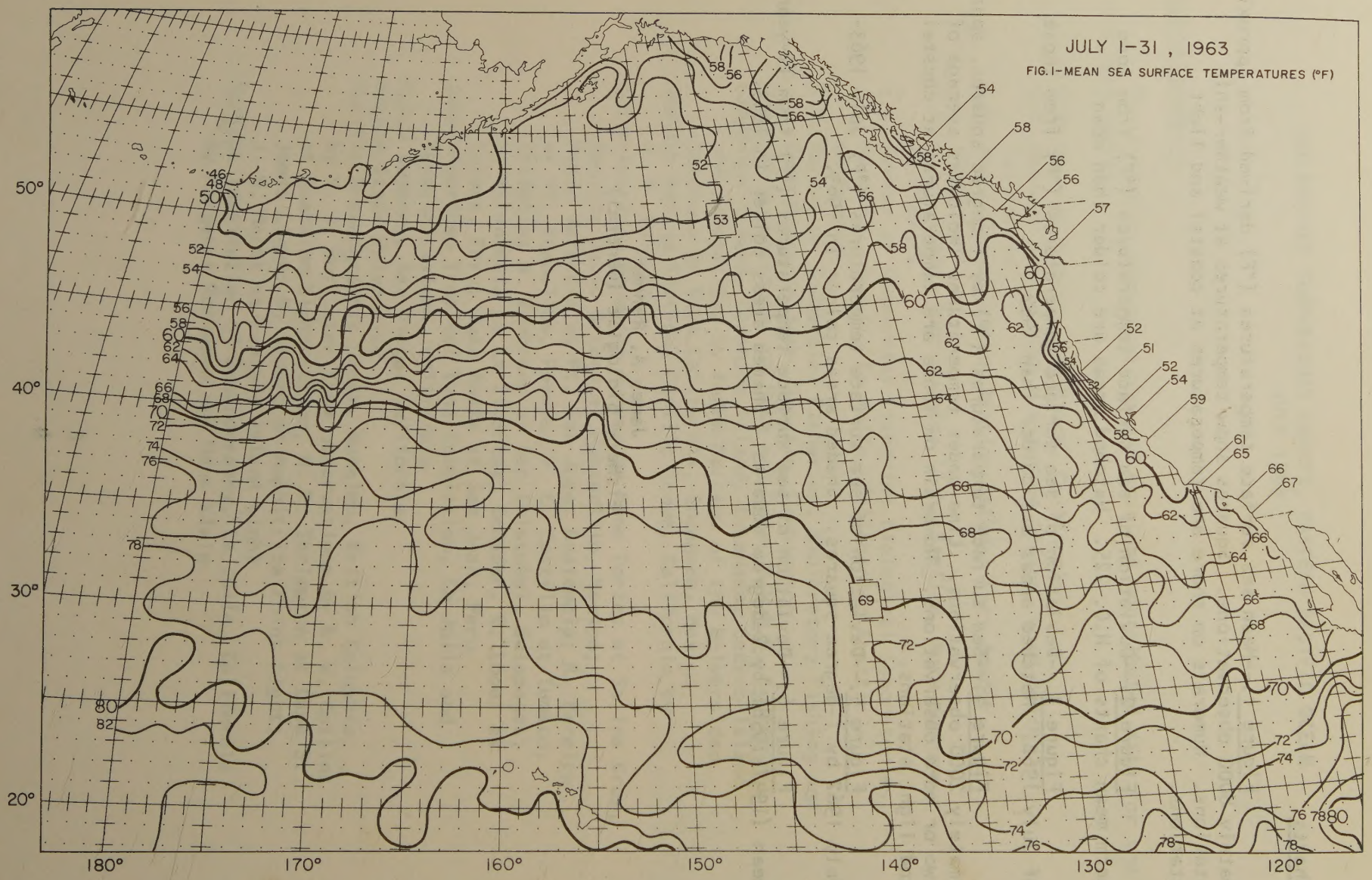
Figure 3.--Deviation of sea surface temperatures (°F) from those of July 1962. Hatched areas are colder than 1962.

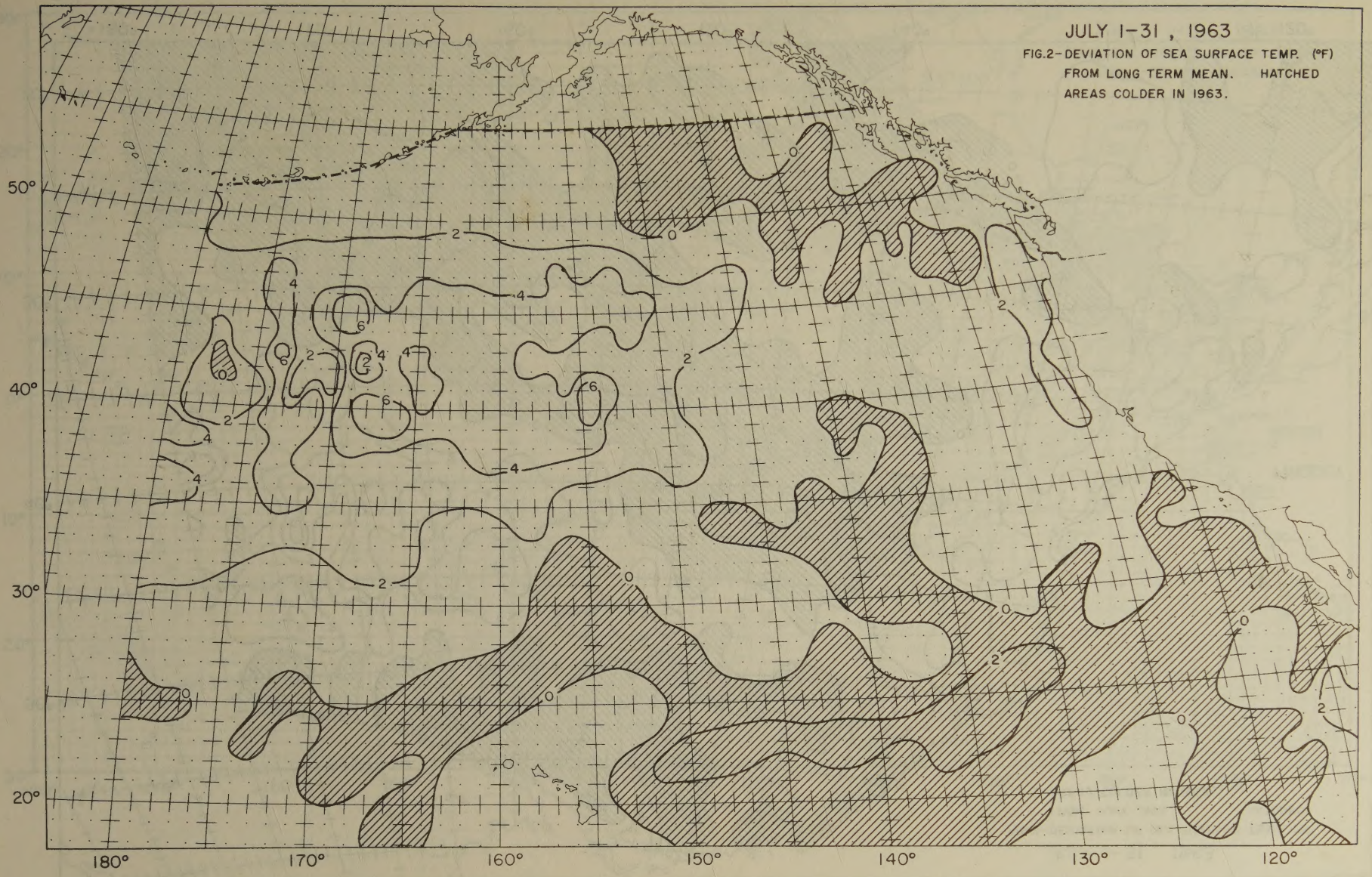
Figure 4.--Sea surface temperatures (°F) by 1-degree squares, approximately 2000 observations. Line under temperatures indicates average of two or more observations. Numerals on shore are temperatures at coastal and light stations.

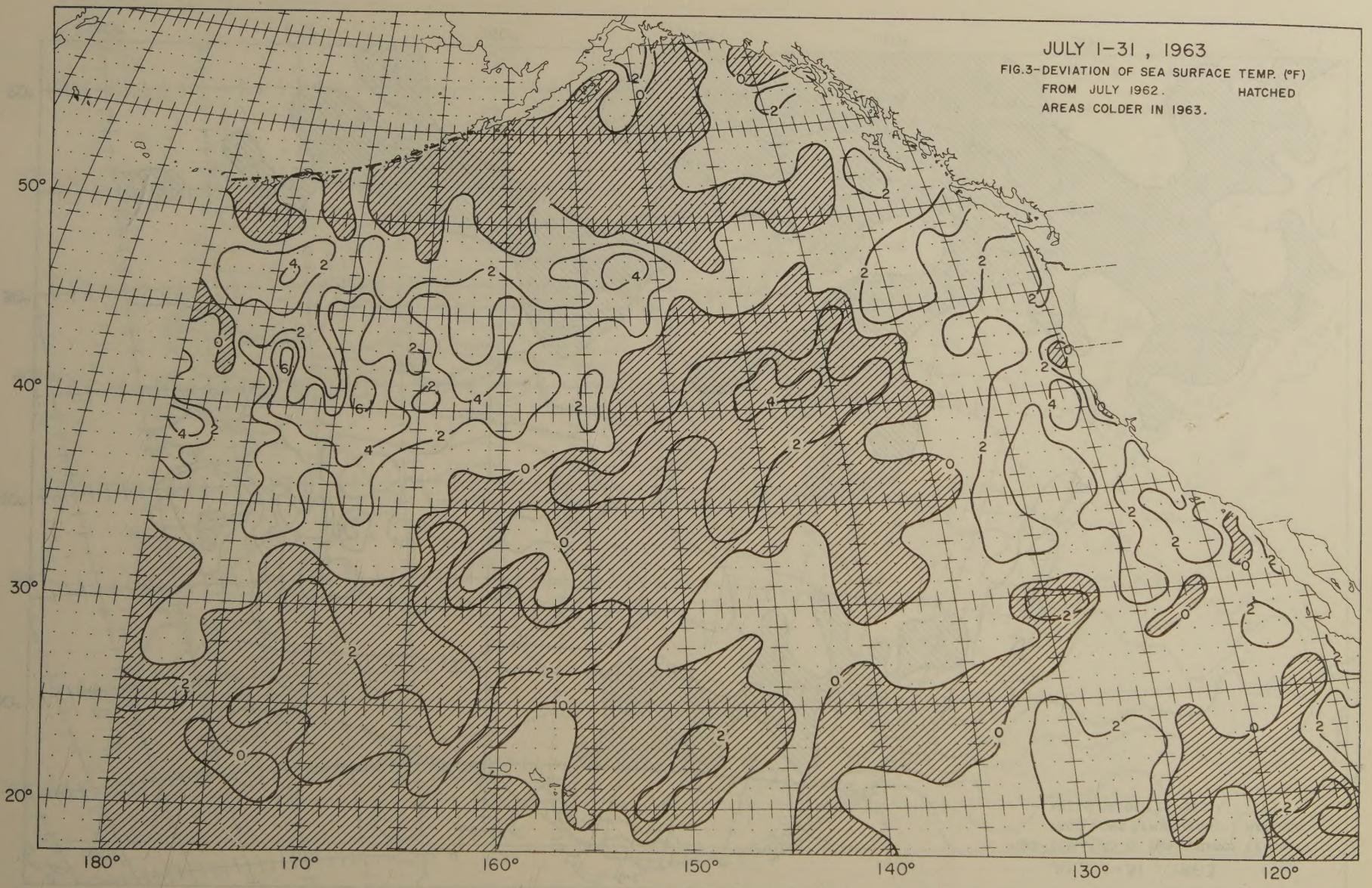
Figure 5.--Deviation of sea surface temperatures (°F) July 1963-July 1962 by 1-degree squares. Shaded areas colder in 1963.

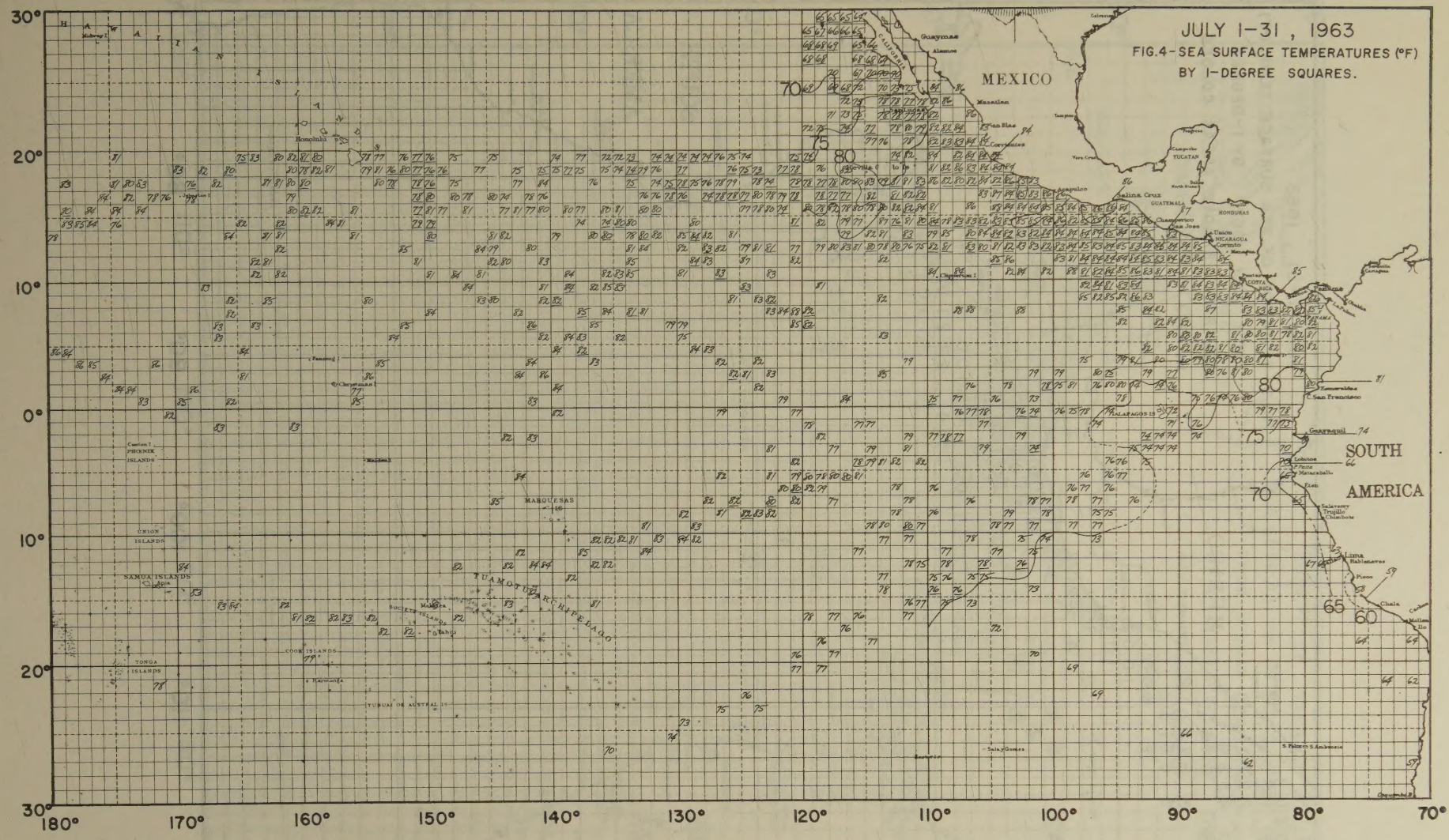
Figure 6.--Deviation of sea surface temperatures (°F) from 12-year mean (1947-1958) by 2-degree squares. Shaded areas colder in 1963.

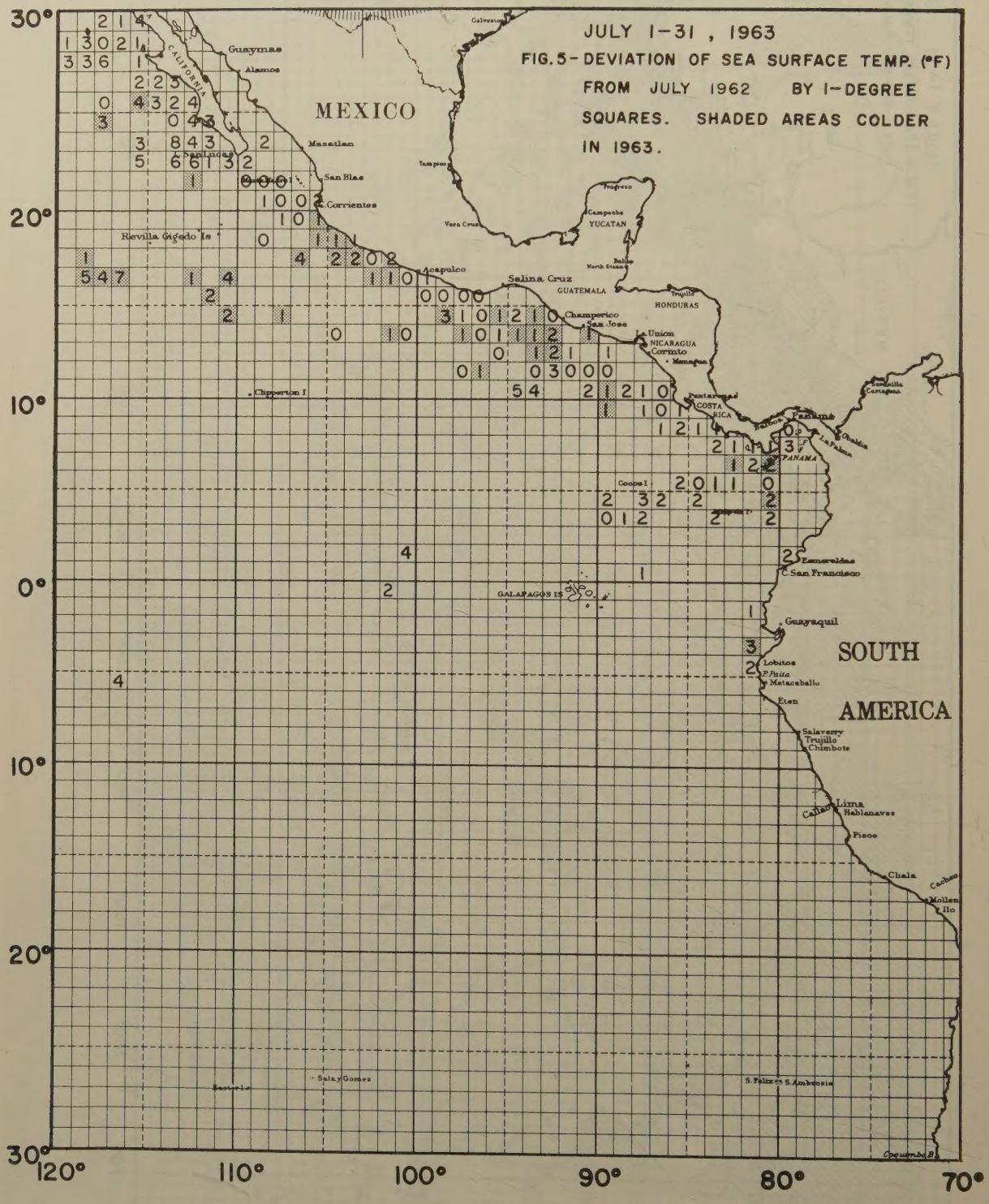
James A. Renner
Fishery Biologist (General)

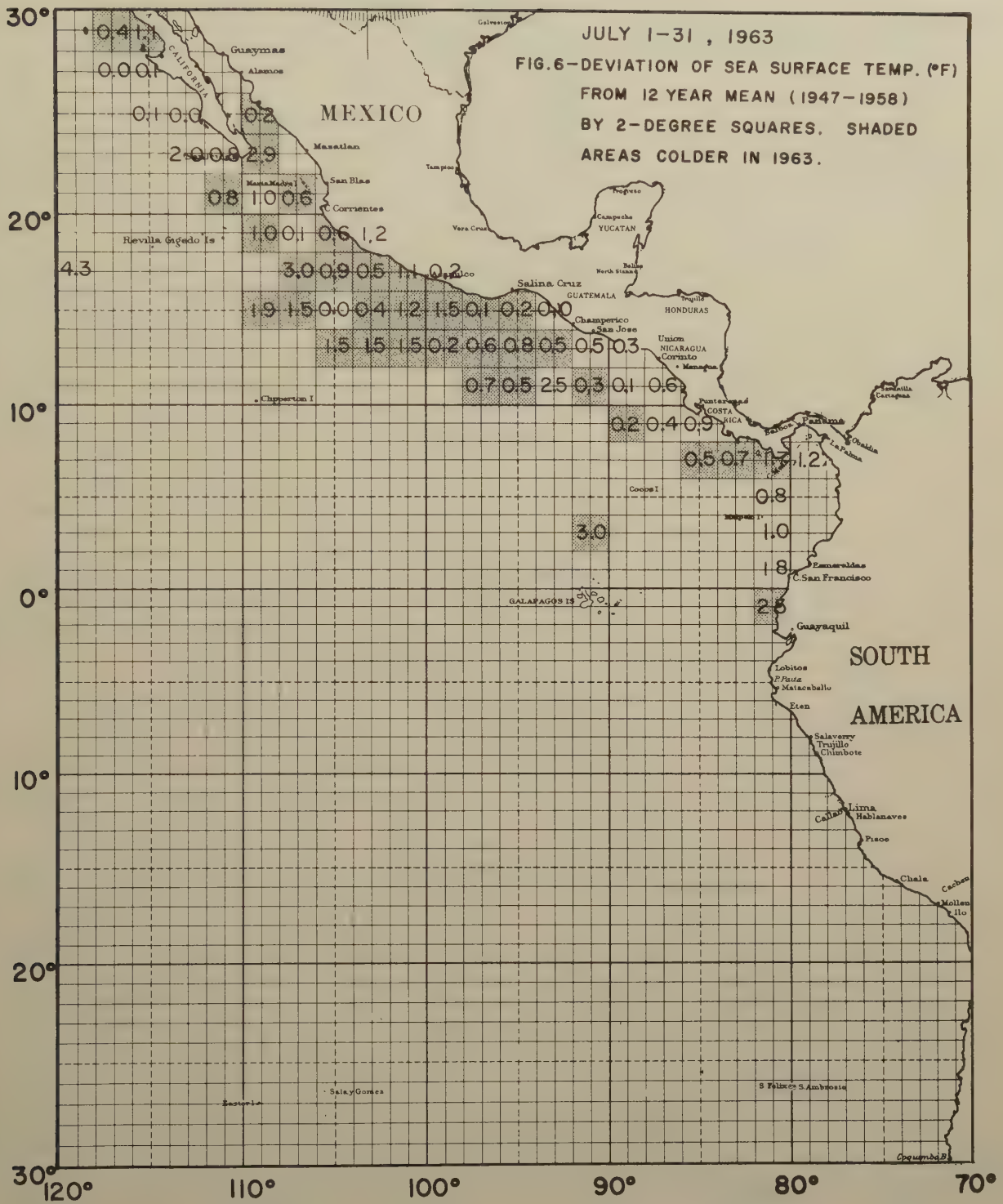

JULY 1-31 , 1963
FIG. 1-MEAN SEA SURFACE TEMPERATURES (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

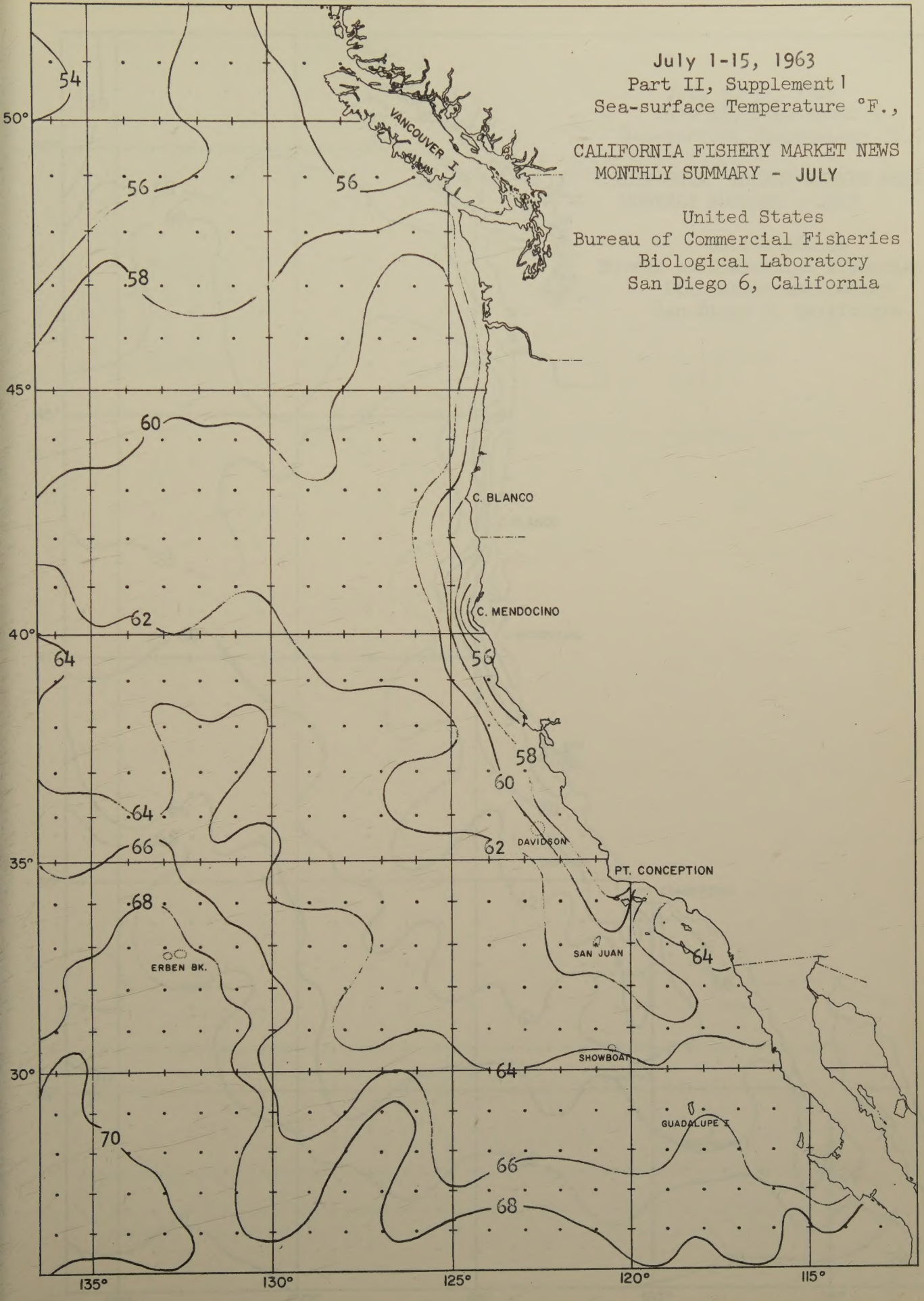

JULY 1-31 , 1963
FIG.2-DEVIATION OF SEA SURFACE TEMP. (°F) FROM LONG TERM MEAN. HATCHED AREAS COLDER IN 1963.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


JULY 1–31 , 1963
FIG.3–DEVIATION OF SEA SURFACE TEMP. (°F) FROM JULY 1962. HATCHED AREAS COLDER IN 1963.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


JULY 1-31, 1963
FIG.4-SEA SURFACE TEMPERATURES (°F)
BY 1-DEGREE SQUARES.
MEXICO
SOUTH
AMERICA
HAWAIIAN ISLANDS
Honolulu
PHOENIX ISLANDS
UNION ISLANDS
SAMOA ISLANDS
TONGA ISLANDS
COOK ISLANDS
MARQUESAS
TUAMOTU ARCHIPELAGO
TUBUAI OR AUSTRAL IS.
Tahiti
Papeete
Manzanillo
Acapulco
Salina Cruz
Guayaquil
Callao
Lima
Valparaiso
Chile
30°
20°
10°
0°
10°
20°
30°
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°


JULY 1-31, 1963
FIG. 5 - DEVIATION OF SEA SURFACE TEMP. (°F) FROM JULY 1962 BY 1-DEGREE SQUARES. SHADED AREAS COLDER IN 1963.
MEXICO
SOUTH AMERICA
CALIFORNIA
Guaymas
Alamos
Mazatlan
Sanblicas
San Blas
Corrientes
Revilla Gigedo Is
Acapulco
Salina Cruz
GUATEMALA
HONDURAS
Champerico
San Jose
Union
NICARAGUA
Corinto
Managua
Punta Arenas
COSTA RICA
Puerto Limon
Panama
PANAMA
Cartagena
Coiba I
Coopes I
Esmeraldas
C. San Francisco
GALAPAGOS IS
Guayaquil
Lobitos
P. Pasita
Matacaballo
Eten
Salaverry
Trujillo
Chimbote
Callao
Lima
Hablanaves
Pisco
Chala
Cachos
Mollendo
Sala y Gomez
S. Felix
S. Ambrosio
Tampico
Vera Cruz
Progreso
Campeche
YUCATAN
Belize
Trujillo
Chipperton I
30°
20°
10°
0°
10°
20°
30°
120°
110°
100°
90°
80°
70°


JULY 1-31, 1963
FIG. 6-DEVIATION OF SEA SURFACE TEMP. (°F) FROM 12 YEAR MEAN (1947-1958) BY 2-DEGREE SQUARES. SHADED AREAS COLDER IN 1963.
MEXICO
SOUTH AMERICA
CALIFORNIA
Guaymas
Alamos
Mazatlan
San Blas
Corrientes
Revilla Gigedo Is
Salina Cruz
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
Champerico
San Jose
Corinto
Managua
Chipperton I
Cocos I
GALAPAGOS IS
Esmeraldas
C. San Francisco
Guayaquil
Lobitos
P. Pasta
Matacaballo
Eten
Salaverry
Trujillo
Chimbote
Lima
Callao
Hablanaves
Pisco
Chala
Mollendo
Ilo
Sala y Gomez
S. Felix
S. Ambrosio
30°
20°
10°
0°
10°
20°
30°
120°
110°
100°
90°
80°
70°


July 1-15, 1963
Part II, Supplement 1
Sea-surface Temperature °F.,
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - JULY
United States
Bureau of Commercial Fisheries
Biological Laboratory
San Diego 6, California
VANCOUVER I.
C. BLANCO
C. MENDOCINO
DAVIDSON
PT. CONCEPTION
SAN JUAN
SHOWBOAT
GUADALUPE I.
ERBEN BK.
54
56
58
60
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50°
45°
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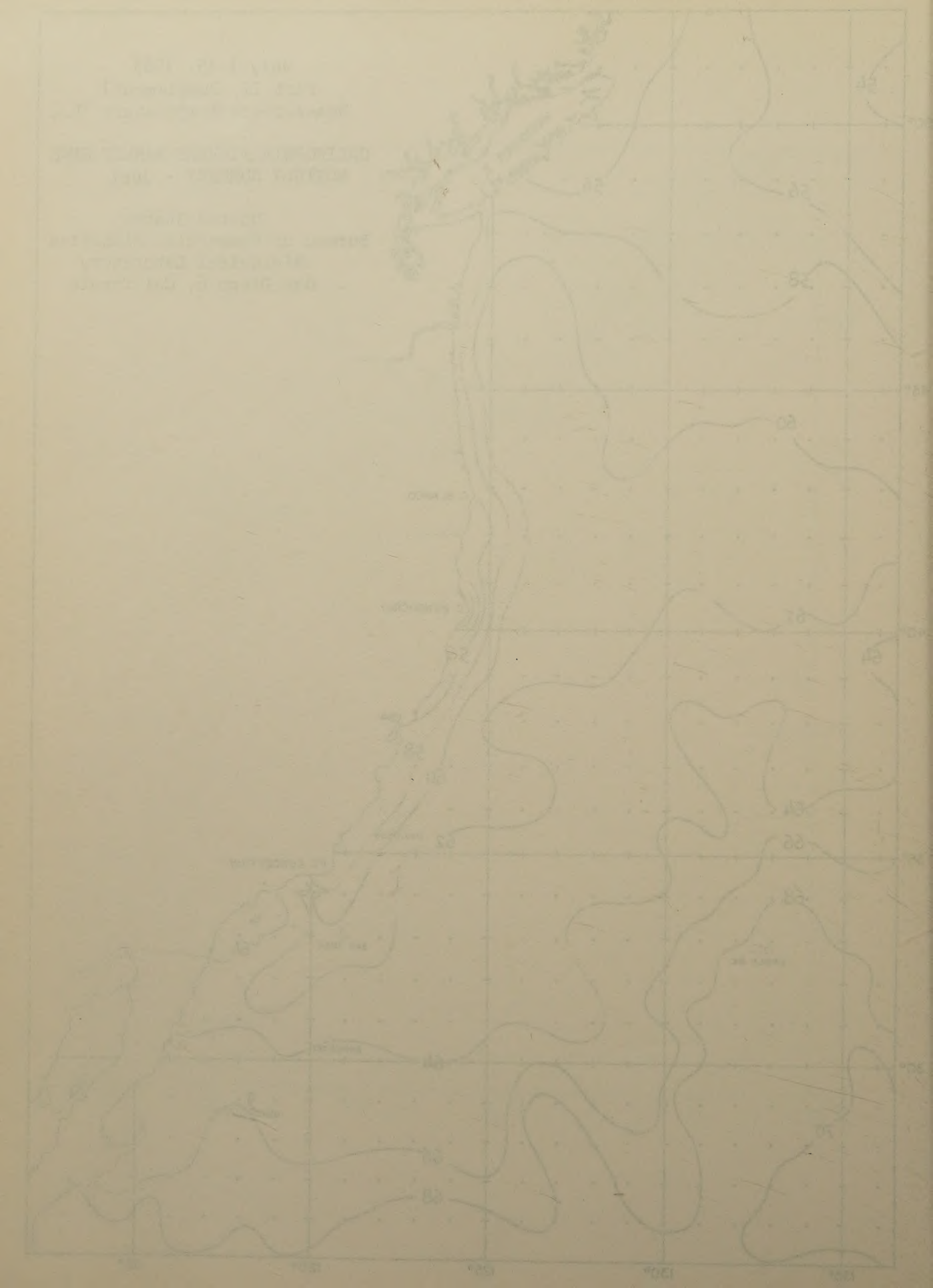
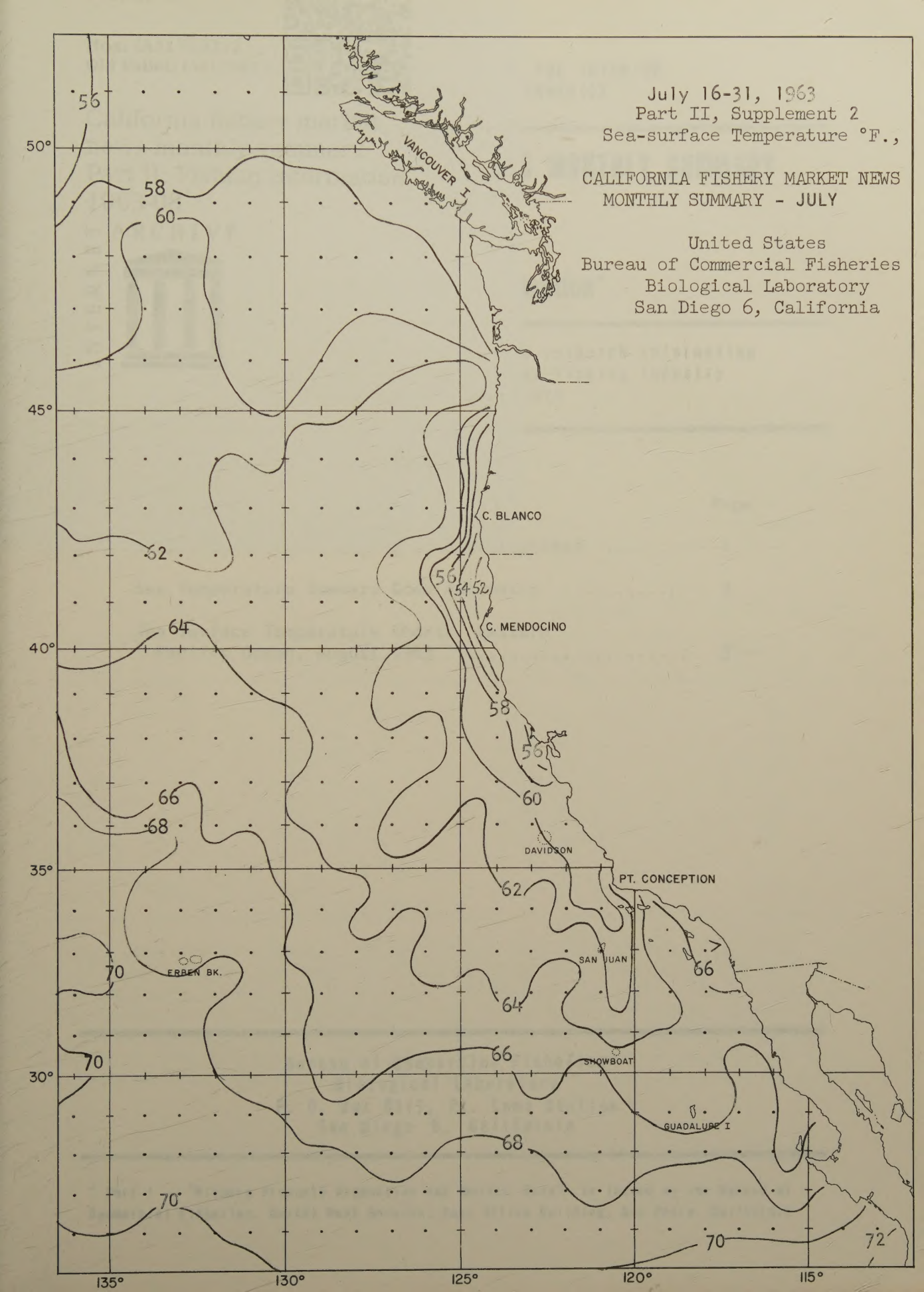
35°
30°
135°
130°
125°
120°
115°




July 16-31, 1963
Part II, Supplement 2
Sea-surface Temperature °F.,
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - JULY
United States
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San Diego 6, California
VANCOUVER I.
C. BLANCO
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PT. CONCEPTION
SAN JUAN
SHOWBOAT
GUADALUPE I
ERBEN BK.
50°
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